

PATENT

INSTITUT FRANÇAIS DU PETROLE

**METHOD OF GENERATING A GRID ON A HETEROGENEOUS  
FORMATION CROSSED BY ONE OR MORE GEOMETRIC  
DISCONTINUITIES IN ORDER TO CARRY OUT SIMULATIONS**

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ABSTRACT

- Method of generating a hybrid grid of a heterogeneous formation crossed by one or more geometric discontinuities such as, for example, an underground formation where one or more wells have been drilled, or a fractured formation, by combining structured grids and non-structured grids in order to carry out simulations in accordance with a defined numerical pattern.
- Hybrid gridding in an application to a medium crossed by wells for example is essentially performed by associating a first structured grid (G1) for gridding of the heterogeneous medium respecting the discontinuities thereof with second structured, radial type grids (G2) for gridding of a zone around each pipe or well, which allows to better respect particular constraints linked with flows in this zone. In order to connect the first grid of the medium and the second well grids, non-structured transition grids (G3) are interposed between them and the power diagram technique is used therefore, which is particularly advantageous in that it allows to appropriately connect non-regular structured grids.
- Applications : hydrocarbon reservoir simulators for example.

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